

Cracking Game 2

Step 1: Diagram and Inventory

We took care of this step in the lesson component.

Step 2: Symbolize the Clues and Double-check

The rules in this game are a little different from the ones we saw in the first game. Take another look at the first clue, “Greyhounds are featured on day 1.” This is a concrete clue that tells us an exact location for greyhounds. Notice that it does not say that greyhounds can occur only on day 1. Symbolize this clue by putting it directly on the diagram.

		K: HMS							
① diagram	p: gnr		1	2	3	4	5	6	7
	Clue	- - K -	-	-	-	-	-	-	-
	Shelf	- - p -	g						

The next clue should seem very familiar. It states that “no breed is featured on any two consecutive days.” This is an antiblock clue. Notice that this clue applies to all six elements. While you could create six versions of this clue, one for each element, it would not be very *concise*. Here, the most concise way to symbolize this clue is to write the word “same” twice inside the antiblock.

②

same	same
------	------

Alternatively, you could choose a letter like “X” to represent a generic element. While this would work for many games, we do not recommend this as a strategy since some LSAT games use X as an element. Using an X, therefore, would not be *clear* every time.

The next clue provides information about days 1 and 7. The clue restricts the two spaces to being different from one another. This is a concrete clue since it gives us some solid information. The minute an element is placed on day 1, it cannot be on day 7, and vice-versa. Symbolize this clue by demonstrating that the two days cannot be the same as one another.

③ $1 \neq 7$

This next clue is very complex, but it also provides quite a bit of useful information. First, note that the clue provides the exact number of Himalayan kittens. This is an element clue. Second, notice that the clue gives some concrete information about where H cannot go. The best way to handle this clue is to be *consistent*. Begin with the second half. Mark an $\mathcal{H}$ on your diagram on day 1. Next, write “HHH exactly” with your other clues. The final symbolization should look like the following.

- ④ HHH exactly and diagram

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue Shelf	$\frac{K}{p}$	$\frac{H}{g}$						

The final clue also provides quite a bit of information that is impossible to symbolize as a single concise clue. Therefore, just as in the previous clue, break this clue into two pieces. The first half of the clue is concrete information. Mark this on your diagram. The second half of the clue is an antiblock. Remember that all of your symbolizations should fit neatly onto your diagram. Since we have a diagram with two rows, one of kittens and one of puppies, make sure that this antiblock is vertical.

- ⑤ diagram and

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue	K	H						
Shelf	p	g						r

Make sure to double-check those clues, and we're on to the deductions.

Step 3: Make Deductions and Size Up the Game

By now, you should have a list of clues that looks like this. Some of these will actually be on your diagram, but we placed them here to give you the concise list.

1. diagram
2.

same	same
------	------
3. $1 \neq 7$
4. HHH exactly and diagram
5. diagram and

H
7

As discussed in the lesson, with concrete clues, it is best to skip ahead directly to multiclude deductions. Notice how clue 2 overlaps clue 1. Since g is on day 1 and since breeds cannot be shown consecutively, then g cannot be on day 2. Mark this on your diagram.

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue	- - K	g						
Shelf	- - p		g					g

Next, note how the first clue, which is on day 1, also overlaps with clue 3. Since g is on day 1, then g cannot be on day 7. Mark this on your diagram.

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue	- - K	g						g
Shelf	- - p		g					g

The next thing to notice is that there are only 3 possible breeds of dogs to be shown. Day 7 now states that neither r nor g can be on day 7. Therefore, n must be the puppy breed shown. Specific *must be true* information is always better than *must be false* information. Mark n on the diagram.

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue	- - K	g						g
Shelf	- - p		g					n

Deductions can build on one another. Antiblocks are some of the most powerful clues possible in an LSAT game. Go back to clue 2. Now that we know that n is shown on day 7, we can deduce that n cannot be shown on day 6! Mark this on the diagram.

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue	- - K	g						g
Shelf	- - p		g				n	n

Finally, look at clue 4. This clue states that H is featured exactly 3 times. Clue 2 states that the same breed cannot be featured consecutively. As a result, there will be at least one space after each of the first two Hs. Be careful here. Do not assume that there must be exactly one space between each. There is enough space on the diagram to have a double gap between either the first and second H or the second and third H. The final deduction should look like this.

H _ ... H _ ... H

Remember that part of the deduction stage is assessing the game. Which element or clue will have the greatest impact on the game? Since the H will take up so much room on the diagram and since it cannot be placed with r, the H will drive this game. Make every effort to place the three Hs first as you work through the game.

Tip!

2D games will often feature a question that appears to be a Grab-a-Rule, but isn't. If you aren't sure, go ahead and try it. Best case scenario: it is one. If you get stuck, don't panic. Just move on to the Specific questions and come back to this one.

Steps 4 and 5: Assess the Question and Act

See a Grab-a-Rule question? Possibly? Try it first, even if you are not sure.

Step 6: Answer Using Process of Elimination

1. Which one of the following could be the order in which the breeds of kitten are featured in the pet shop, from day 1 through day 7?

- (A) Himalayan, Manx, Siamese, Himalayan, Manx, Himalayan, Siamese 
- (B) Manx, Himalayan, Siamese, Himalayan, Manx, Himalayan, Manx 
- (C) Manx, Himalayan, Manx, Himalayan, Siamese, Manx, Siamese 
- (D) Siamese, Himalayan, Manx, Himalayan, Siamese, Siamese, Himalayan 
- (E) Siamese, Himalayan, Siamese, Himalayan, Manx, Siamese, Himalayan 

Here's How to Crack It

Remember to grab rules one by one.

Rule one deals with puppies, so it doesn't help.

Rule two says no consecutive breeds, so there goes (D).

Rule three says $1 \neq 7$, so we can say goodbye to (B).

Rule four says "exactly three" Hs, so (C) is gone.

Rule four also states, H is not on day 1, so (A) is also out.

Choice (E) is the only one left, so it must be the answer.

Time to move on to the Specific questions. Let's look at question 2.

2. If Himalayans are not featured on day 2, which one of the following could be true?

- (A) Manx are featured on day 3. 
- (B) Siamese are featured on day 4. 
- (C) Rottweilers are featured on day 5. 
- (D) Himalayans are featured on day 6. 
- (E) Greyhounds are featured on day 7. 

Here's How to Crack It

First, note the question stem is *could be true*. This means that we can eliminate any answer choice that must be false. As with all Specific questions, first put the new information in the diagram and then deduce what else happens with that information. Note that now H cannot be first or second. Our deduction with H proved that both the first and second H must have at least one space following it. Therefore, there is just enough room left on the diagram to place all three Hs. Your diagram should now look like the following.

K: HMS		1	2	3	4	5	6	7
p: gnr								
Clue	- - K	-	H	-	-	-	-	-
Shelf	- - p	-	g	r	-	-	-	n
②	- - K	-	H	H	H	-	H	-
	- - p	-	g					n

Next, clue 5 prevents r from being with H, so note on the diagram that r cannot be on day 3 or 5. Nothing else seems to be forced, so move on to the answer choices. Let's eliminate any answer choice that must be false.

Choice (A) must be false since H is on day 3. Choice (B) seems fine. Choice (C) is false since H is on day 5. Choice (D) is false since H is on days 3, 5, and 7. Finally, (E) is false based on our deductions. Choice (B) is the only one remaining, so it must be the answer.

Now you can move on to the Specific question number 6.

6. If Himalayans are not featured on day 7, which one of the following could be true?

- (A) Greyhounds are featured on days 3 and 5. 
- (B) Newfoundlands are featured on day 3. 
- (C) Rottweilers are featured on day 6. 
- (D) Rottweilers are featured only on day 3. 
- (E) Rottweilers are featured on exactly three days. 

Here's How to Crack It

This question tells us that H cannot be last. Since H is the most restrictive element, let's place the three Hs and see what else happens with the diagram. Next, carry down deductions from the clue shelf and make new ones. Day 2 cannot be g and now it cannot be r either. Thus, day 2 must be n and day 3 cannot be n. Likewise, day 6 cannot be n and now it cannot be r either; thus, day 6 must be g and day 5 cannot be g. Finally, r cannot be on day 4. Now, dive into the answers. Just like with question 2, we are looking for a *could be true* answer, so eliminate everything that *must be false*.

K: HMS								
p: gnr								
		1	2	3	4	5	6	7
Clue Shelf	- - K -	H	g	-	-	-	-	n(r)
②	- - K -	H	H	H	-	H	-	H
	- - p	g	-	-	-	-	-	n
⑥	- - K -	H	H	H	H	-	H	H
	- - p	g	n	r	-	g	n	n

Choice (A) has g on days 3 and 5. We deduced that g cannot be on day 5, so eliminate (A). Choice (B) has n on day 3, but we know that day 3 cannot be n, so eliminate (B). Choice (C) has r on day 6, but that would pair r with H, so get rid of (C). Choice (D) seems possible, so hold onto it for now. Choice (E) has r on exactly three days. However, we have no r on days 1, 2, 4, 6, and 7. Therefore, it is impossible for there to be three r. Eliminate (E). The answer is (D).

Let's move on to the final Specific question, number 4.

4. If Himalayans are not featured on day 7, then which one of the following pairs of days CANNOT feature both the same breed of kitten and the same breed of puppy?

- (A) day 1 and day 3 
- (B) day 2 and day 6 
- (C) day 3 and day 5 
- (D) day 4 and day 6 
- (E) day 5 and day 7 

Here's How to Crack It

This question is pretty nice since it is asking us for roughly the same distribution as the previous one. One thing to note: the question asks what day CANNOT feature the same pairs. Make a note that we will POE any answer that could be a pair of days that feature the same breeds. Set up your diagram from the previous problem on a new line.

K: HMS			1	2	3	4	5	6	7
p: gnr									
Clue	- - K	-	H						
Shelf	- - p	-	g	S				n	r
(2)	- - K	-	H	H	H		H		H
(6)	- - K	-	H	H	H	H	S	H	n
(4)	- - K	-	H	H		H		H	n
	- - p	-	g	n				g	n

See any more deductions? No? If the correct answer does not jump out at you, it is always better to "get your pen moving" when you don't see anything more. In other words, stop trying to work this one out in your head. Since we can eliminate any answer choice that could be true, let's just start trying answer choices. The first one that forces us to break a rule is the correct answer. Choice (A) says days 1 and 3. We already know that g is on day 1, so put g on day 3. Next, pick a kitten for days 1 and 3. It cannot be H, so let's arbitrarily try M. The g on day 3 means that day 4 must be n. We have to have at least one r, so put that on day 5. Finally, fill out the kittens for days 5 and 7. We have used M and H already, so let's put S on each of those days.

Let's look at question 3.

3. Which one of the following could be true?

- (A) Greyhounds and Siamese are both featured on day 2. 
- (B) Greyhounds and Himalayans are both featured on day 7. 
- (C) Rottweilers and Himalayans are both featured on day 4. 
- (D) Rottweilers and Manx are both featured on day 5. 
- (E) Newfoundlands and Manx are both featured on day 6. 

Here's How to Crack It

Since this question asks for what could be true, focus on your deductions and eliminate any answer choice that *must be false*.

Choice (A) puts g on day 2. We know that is false from our deductions. Eliminate it.

Choice (B) puts g on day 7. We deduced that n is on day 7. Get rid of (B).

Choice (C) has r and H together on day 4. This violates clue 5. Eliminate it!

Choice (D) has r and M on day 5. This appears plausible. Let's hold on to it.

Choice (E) has n and M on day 6. We know from deductions that n cannot be on day 6. Get rid of (E). The only remaining answer is (D). There is no reason to play it since it is the only one remaining.

If this question felt like a Grab-a-Rule, that is a good thing. However, the only reason we were able to answer this question so efficiently is that we took the time to make some awesome deductions. Never skip the making deductions step. If you do, you will be forced to try each answer choice until one works. This is a tedious process that will always take longer than the 2–3 minutes you spend finding and marking deductions.

One question to go! Onwards to question 5.

5. Which one of the following could be true?

- (A) There are exactly four breeds that are each featured on three days. 
- (B) Greyhounds are featured on every day that Himalayans are. 
- (C) Himalayans are featured on every day that Greyhounds are. 
- (D) Himalayans are featured on every day that Rottweilers are not. 
- (E) Rottweilers are featured on every day that Himalayans are not. 

Here's How to Crack It

This question follows the same logic as the previous one. Let's use our deductions to eliminate any impossible answer choices. If we get stuck, we can always play the remaining choices. Take a look at the answer choices. See anything that can be eliminated? Confused? These answer choices are very hard to parse. Rather than digging through each one, figuring it out, and then thinking about whether it is possible, let's just start trying answers. Since the question asks what *could be true*, the first answer choice that works is the credited response.

Start with (A). This answer choice means that four different breeds of pets will each appear on three different days. We already know from the rules that this is true of H, so really we are looking for whether this can be true of three other breeds. Begin by placing H in the diagram in a valid position. To be as quick and efficient as possible, put H on days 3, 5, and 7. Since H is with n on day 7, put n on days 3 and 5 as well. Now we need another puppy to be on three different days. Since there is already a g on day 1, put g on days 4 and 6. Next, put r on day 2. Finally, see if you can place either S or M with g every time. M can go on days 1, 4, and 6. S can go on day 2.

K: HMS p: gnr		1	2	3	4	5	6	7
Clue Shelf	- - K p	H g	g	-	-	-	H	n (g)
②	- - K p	H g	H	H	-	H	-	H n
⑥	- - K p	H g	H n	H n	H	g	H g	H n
④	- - K p	H g	H n	-	H	-	H g	H n
④A	- - K p	H g	M n	M g	H n	S r	H g	H n
④B	- - K p	H g	(H n)	-	H	-	(H g)	n
⑤A	- - K p	H g	M r	H n	M g	H n	M g	H n

No rules have been broken, so (A) is the answer. Please note that this is not the only valid way to make four sets of three animals. You may have made a valid play with a slightly different distribution.

While you would finish here with this game and move on to the next when taking the actual test, we want to take a brief moment to discuss (B) and (C) or (D) and (E). Many students want to wrongly remove these answers since they appear similar. The LSAT will never provide freebies by having two game answer choices say blatantly the same thing. While these answer choices use similar phrasing, the differences are very important. Choice (B) means that on every day with an H there will also be a g. However, g can occur on its own isolation without violating the answer choice. Choice (C) is the same situation in reverse. Choice (C) means that on everyday which has a g, there must also be an H. Hs can occur without gs in this answer choice. The same logic applies to (D) and (E). Again, the moral of the story is never eliminate a games answer just because it appears to be the same as another answer.

LESSON 3: POE, BASIC CONDITIONALS, AND GROUP GAMES

In the previous game, we saw a variety of different question phrasings. In the end, though, it turns out that all of the variations of must/could, true/false, and EXCEPT/NOT require only two POE strategies. Understanding what the questions actually mean can show you why.

If a question asks what could be true, there needs to be only one situation when the right answer can happen. What, then, do we know about the other four choices? Well, if the right answer can happen, then the four wrong answers can't. That is, the wrong answers on a Could Be True question are things that must be false.

POE Guide: Knowing Right from Wrong with "Could" and "Must"

Could Be True/Must Be False

POE strategy: Try to make the choice true; make an example.

For *could be true* and *must be false* EXCEPT

If you can make the choice true,
pick it.

If you can't, eliminate it.

For *must be false* and *could be true* EXCEPT

If you can make the choice true,
eliminate it.

If you can't, pick it.

Must Be True/Could Be False

POE strategy: Try to make the choice false; make a counterexample.

For *must be true* and *could be false* EXCEPT

If you can make the choice false, elimi-
nate it.

If you can't, pick it.

For *could be false* and *must be true* EXCEPT

If you can make the choice false,
pick it.

If you can't, eliminate it.

Think about a Must Be False question now. What do we know about the other choices? Well, since the right answer is something that can never happen, the wrong answers are things that can. It shouldn't surprise you, then, that the wrong answers on a Must Be False question are things that could be true.

What happens when we add an EXCEPT or a NOT to one of these questions? These words, on the LSAT, can be interpreted as meaning "find four." So when a question asks you "...each of the following could be true EXCEPT," what they're asking you to find is four choices that could be true; the remaining one is the answer you want to pick. What do we know about this choice? That's right: it must be false.

What we're seeing here is that Could Be True/Must Be False form a pair. Adding an EXCEPT or a NOT just changes one to the other.

Now think about an answer choice that must be true. This means it has to be true all the time, no matter what. When the right answer must be true, what we know is that the other four don't have to be true all the time—that is, they could be false. Not surprisingly, Could Be False questions turn out to be the flipside of this; on a Could Be False question, the other four answers must be true. And as before, adding EXCEPT or a NOT turns one of these types of questions into the other.

So hopefully we've demonstrated that the four major question types can logically be reduced into two complementary pairs. We have even more good news for you though. Each pair of questions has a POE strategy that works for both, but you have to be careful to keep your eye on the ball. It's easy to forget what you're doing in the midst of actually doing it. It's also extremely important to understand that the only way you can be sure something happens all the time—or that it can never happen—is to deduce that fact. When you generate an example, you're looking at what could happen, not what must happen.

The upshot of all this is best summarized in the gray box on the previous page. If you put these ideas in your own words and use them assiduously whenever you work games, they will become more intuitive, but you'll have to focus and work carefully for some of the more complicated variations.

Games Technique: Smart POE

Now that you have a better understanding of the logic behind each question stem and how to test remaining answer choices, we want to walk you through the most accurate and efficient way to use POE. As we have demonstrated in the two previous games, having a good set of deductions can simplify a game and improve speed. The other major factor in how quickly you're able to work games is having a smart approach to the questions, and especially to the answer choices.

For many questions, it's hard to know in advance what method will turn out to be the fastest, and there are often several methods to choose from. But there are some methods that are more time-efficient than others on average. Here, in rough order of decreasing speed, are the strongest POE techniques for Games.

Deductions When you work a game, you should always look for deductions. When you work a Specific question, the first thing you should do is represent the new information given and deduce everything you can from it. Why? Because deductions give you the best chance of getting to the answer quickly. Of course, you must be efficient when you're making deductions—don't just stare; keep your pen moving—but the deductions you find will always be your best ammunition. In many cases, your deductions will allow you to find the correct answer directly, and in many others they will allow you to eliminate four wrong answers, which is just as good. If they don't, a good set of deductions will usually eliminate a few answer choices and help you narrow the field significantly.

Prior Work As we described earlier, a big benefit of working Specific questions on the first pass through the game is that, when you get to the General questions, you already have a set of examples and counterexamples handy. Often you can use the information to find the answer to a General question without having any real idea why it's the answer. This is not only a satisfying feeling, but a very time-efficient practice. The one caution about using prior work is that, generally, you cannot use information from one Specific question to help you answer another. There are certain special circumstances when this can be made to work, but it should be done with extreme care. On General questions, however, this is an

extremely powerful technique. A final note about prior work: be careful about the question stem and the POE approach. Prior work provides *examples* of valid plays. Therefore, they show Could Be True and Could Be False possibilities. They should be used as POE tools rather than proof on Must Be questions.

Grabbing Rules When the answer choices contain a lot of information, often you can narrow the field significantly by eliminating blatant rule violations. In a pure Grab-a-Rule question, in which the answer choices are all complete listings, this is the only technique you need in order to find the answer. Even in less extreme circumstances—in which the answer choices are partial lists, or even in many Specific questions—you'll be able to find choices that contain outright violations of the rules. Spotting them may be a matter of going through your clue list only once and looking for these violations in the remaining choices.

Testing the Answer Choices This is the most time-consuming method of POE and therefore should be saved as a last resort. For many of the questions, if you have invested a good amount of time into your deductions, you can find the correct answer. On General questions, you can also look at previous work to eliminate wrong answer choices. Unfortunately, every once in a while you will encounter

a question where, even after applying these three techniques above, you still have more than one answer choice left. In these cases, you need to know what kind of answer you want. This was covered earlier and is summarized in the gray box just to the left here, but you also need a method for making choices true or false.

If an answer choice could be true, that just means that if you plugged it into the diagram, it wouldn't force you to break any rules. So when all else fails on Could Be True or Must Be False questions, you can always Plug In the Answers.

Having a consistent method is particularly helpful when you get stuck on a Must Be True question, since most of these are answered by deductions (on General questions) or by deducing from the information in the question (on Specific questions).

When an answer choice must be true, that means that it could never be false. If you can find one instance—any instance—for which the answer

choice isn't true, it's an answer choice that could be false. So, if you get stuck on a Must Be True question, you can make up any scenario, and chances are that several of the answers won't be true in that scenario: those are answers that could be false. If one scenario won't eliminate all four that could be false, rearrange your scenario to see what else you can get rid of. It usually takes only two or three valid scenarios to get rid of all wrong answers.

For *Could Be True* and *Must Be False* questions:

- Find the answer or answers that must be false by Plugging In the Answers and deducing.
- If the answer must be false, it will force you to break a rule.

For *Must Be True* and *Could Be False* questions:

- Find the answers that *Could Be False* by making up any possible scenario you want, within the constraints of the question.
- If an answer is false in that scenario, it must be false.
- On a *Must Be True* question, you may have to make up a new scenario or two to eliminate the remaining answers.

Let's see how well you've comprehended the importance of POE. Below you will find a short multiple-choice quiz that will assess how you should approach various types of questions.

POE QUIZ

1. A question stem asks, "if A is on day 2, which of the following must be true?" You don't have the answer in your deductions. What do you do on your diagram?
 - (A) Choose the first answer that works.
 - (B) Eliminate answer choices that work as stated.
 - (C) Eliminate answers that can work in positions other than those stated.
 - (D) Ignore the question stem and trust your luck.
2. A question asks "Which of the following answers could be true?" How do you check the answers?
 - (A) Choose the first answer that works.
 - (B) Eliminate answer choices that work as stated.
 - (C) Eliminate answer choices that work in multiple positions.
 - (D) Ignore the question stem and trust your luck.
3. A question stem asks "...each of the following could be true EXCEPT...." What do you do?
 - (A) Choose the first answer that works.
 - (B) Eliminate answer choices that work as stated.
 - (C) Eliminate answer choices that do not work.
 - (D) Ignore the question stem and trust your luck.
4. A question stem asks "which must be false...." You are not able to answer it using your deductions. How do you test each answer choice?
 - (A) You don't. That's too time-consuming.
 - (B) You plug each answer into your diagram as written. The one that works is correct.
 - (C) You plug each answer into your diagram as written. Eliminate the ones that work.
 - (D) You plug each answer into a different location in your diagram. If it works, eliminate it.

5. A question asks “which of the following could be false.”
What do you do?

- (A) Find and select the answer that must be true...duh!
- (B) Eliminate any answer that must be true.
- (C) Eliminate any answer that could be true (but doesn't have to be).
- (D) Give up on this test and become a doctor instead.

Cracking the POE Quiz

Ok, let's see how you did.

Question 1 asks about Must Be True answers. Remember, the only way to prove a Must Be True/False answer is through deductions. If you don't have deductions, you need to resort to testing each answer choice. The correlate to a Must Be True answer is a Could Be False. In order to test each answer choice, you must falsify it and see if it is still possible to have a valid play of the game. If the answer choice works in a position other than that stated in the answer, then that choice could be false. The answer to question 1 is (C).

Question 2 asks about Could Be True answers. You would first eliminate any answers you knew to be false from your deductions. If you have to test answers on your diagram, these are straightforward. Since only one choice can be correct, the first one that works in a valid diagram is the answer and you would choose it. The answer to question 2 is (A).

Question 3 asks about could be true EXCEPT. Remember that EXCEPT/NOT transform the question into its opposite. In reality, this question is asking for which answer choice must be false. You should find and eliminate the four “Could Be True” answers. Therefore, if an answer choice works as stated, it should be eliminated. The answer to question 3 is (B).

Question 4 asks about Must Be False answers. Wrong answers could be true. If you do not have the answers as a deduction, you have to test them. Plug in the answer choices directly as written into the diagram. If they work, then they could be true, so eliminate them. The answer to question 4 is (C).

Question 5 asks about Could Be False answers. These are among the most challenging of all question types. First, using your deductions, you need to eliminate any answer choice that you have deduced must be true. If you have to test any remaining answer choices, you need to plug in an answer choice in a different location or manner than what is stated. If it still produces a valid diagram, then that is the answer choice. If you are unable to get the answer choice to work in a different way than what is stated, you would eliminate that answer as a Must Be True. The answer to question 5 is (B).

Games Technique: Group Games

So far, the games we've seen have asked us to put things in order to arrange them in space. The clues often provide information about the location of elements relative to one another. The next basic game task is *grouping*. Grouping games are often fairly easy to identify from the setup: putting people on committees, assigning commuters to cars, picking players for teams, and so on. Sometimes they can be more difficult to recognize, but in those cases, you can get help from the clues. In a Grouping game, the clues most often talk about elements that have to go together, or those that can't go together.

There is an important difference between Group games and Ordering games block symbols. You'll note that when we symbolized block and antiblock clues with Ordering games, the elements were separated by a vertical line. This vertical line indicated that the elements were located in different columns. With Grouping games, the vast majority of block and antiblock clues deal with situations within a single column. As a result, you should not include a line between elements. Here's an example.

A and B always work together.

A and B are always together, so place them in a block. Also, since order is not an issue here, you don't need an arrow indicating that BA is also valid. A single symbol stands for both. The symbol for the above clue should look like the following.

AB

A key thing to keep track of in Grouping games is how many elements each group contains. These are called *placeholders*. Group games are often driven by placeholders. Sometimes the setup will specify exactly how many placeholders belong in each group. The setup will use language such as "exactly two people will be in each location." These are the easier variant of Grouping games.

Placeholders can be symbolized very easily. Simply put the correct number of lines in each group. We could symbolize the statement above in a three-category game by placing two lines under each column.

1	2	3
--	--	--

Hint:

A grouping game asks you to put the elements into collections of some sort; Grouping games usually include clues that can easily be translated as blocks or antiblocks.

A more challenging variety will not specify exactly how many elements belong in each group. In this instance, focus on placeholder deductions. By focusing on the block and antiblock clues provided by the game, you can often figure out whether a category must have a placeholder. Consider the following situation. A job has three categories and is diagrammed below. Note how basic this diagram appears since we do not know exactly how many places go in each category.

category 1	category 2	category 3

We also have three clues. Clue 1 states that “A cannot work with B.” Clue 2 states “A cannot work with C,” and clue 3 states “B cannot work with C.” These should all be symbolized as antiblocks.

$\overline{AB}$

$\overline{AC}$

$\overline{BC}$

Take a moment to think about the logic here. Since A cannot work with either B or C, once A is placed into one of the three categories, then B and C must go into the other two. However, since B cannot be with C, these two elements must also be split up. No matter what, this situation forces at least one element to be placed into each category. This is symbolized below.

category 1	category 2	category 3
—	—	—

There are several other methods for making placeholder deductions. We will discuss these in the next lesson.

Games Technique: Basic Conditional Statements

In addition to blocks and antiblocks, Group games often employ the use of conditional clues. We have already seen how important conditional clues are on the Arguments section. Not surprisingly, they are also extremely important to the Games section of the LSAT. These are also the most frequently misinterpreted and misunderstood clues; everyone who takes the LSAT should exercise extra care when working with them.

We have previously introduced the arrow as a symbol for conditional clues on the arguments. If you haven't read the arguments chapter yet, we recommend turning to page 78 in this book and reading the discussion there to help you better

understand conditionals in games. We will use the same symbolization here. Suppose we're symbolizing the following clue.

If X is on floor 3, then Y is on floor 5.

When using the arrow diagram, the “if” statement always goes to the left of the arrow. The “then” statement goes to the right of the arrow. When conditional statements indicate a specific position for the elements, as in the clue above, it is best to use subscripts. Therefore, the clue should be symbolized like this.

$$X_3 \rightarrow Y_5$$

Whenever we're given a conditional clue, we should also *immediately* represent its contrapositive. The way to make a contrapositive statement is to flip and negate the statement. We exchange the order of the statements, and then we add a negation sign. We often use the tilde (~) to indicate negation on conditional clues. The contrapositive of the clue symbolized looks as follows.

$$\sim Y_5 \rightarrow \sim X_3$$

By making the contrapositive (through flipping and negating), you are technically making a deduction. However, do not wait until the deduction stage to do so. Let's practice a few more.

If X is on floor 3, then Y is not on floor 5.

Note the slight change in language. Now, Y is *not* located on the fifth floor. Don't panic, simply add this into the symbolization.

$$X_3 \rightarrow \sim Y_5$$

The contrapositive is still made by flipping and negating the conditional. The only difference here is that a negative of a negative becomes a positive.

$$Y_5 \rightarrow \sim X_3$$

Here's a trickier one.

W is on floor 4 if Z is on floor 2.

Remember that the order of the sentence does not affect the order of the conditional. The “if” statement *always* goes to the left of the arrow. It doesn't matter if the “if” condition occurs in the second half of the sentence. Therefore, this clue should be symbolized like the following. We also immediately did the contrapositive.

$$Z_2 \rightarrow W_4$$

$$\sim W_4 \rightarrow \sim Z_2$$



To check out which law schools are “Toughest to Get Into,” take a look at your online Student Tools. If you haven't registered yet, go to PrincetonReview.com/prep

One last note about symbolizing conditional statements: make sure that your arrows align! Conditional clues are inherently confusing. Having the arrows aligned removes some of the confusion associated with these clues by forcing them into some semblance of an order. The other pragmatic reason for aligning the arrows will be revealed as we discuss the logic of conditionals below.

It's important to understand what we can conclude—and, just as important, what we can't conclude—from a pair of conditional statements. Generally speaking, we use an arrow to symbolize these clues because we can draw conclusions only in one direction. It's best to think of using these clues as a two-stage process. First, we examine the statement on the left-hand side of the arrow. If it doesn't match the diagram, then the rule doesn't apply! There's nothing more we can do; the rule might as well not exist. If that statement does match the diagram or question, then the rule applies, and we can move on to stage two. Follow the arrow to the right-hand side, which shows the conclusion we're allowed to draw.

Here's a summary of the process using the first conditional statement.

If X is on floor 3, then Y is on floor 5.

$$X_3 \rightarrow Y_5$$

$$\sim Y_5 \rightarrow \sim X_3$$

If we know...	...then we can conclude.
X is on three	Y is on 5
Y is not on 5	X cannot be on three
X is not on 3	nothing!
Y is on 5	nothing!

Here are some possible valid arrangements that can be made from this clue.

Floor 1	Floor 2	Floor 3	Floor 4	Floor 5
		X		Y
Y	X			
X				Y*
	X		Y	

The only arrangement that the rule forbids is when X is on floor 3 and Y is **not** on 5!

The arrangement marked with the * above is usually the one that gives test-takers trouble; for this reason you'll often encounter it. Note that we can conclude nothing if Y is on 5. You cannot move against the arrow. Similarly, we can conclude nothing if X is not on 3. This rule has nothing to say about the layout of the diagram unless X is on 3.

Interpreting your symbols correctly is a big part of being able to work with conditional clues. You must be very careful to follow the symbol, rather than relying on what you think “should” be true. If you have aligned your arrows, there is an easy, mechanical way to interpret the clues:

Aligned arrows → easy way (see what we did there?)

Use your hand to cover the right side of the arrows. Then, looking only at the left side, ask yourself, “does clue 1 apply?” If the left side doesn’t apply, ignore that rule. If the left side applies, remove your hand and check to see that the right side of the arrow clue is also followed. Continue the process for each conditional.

Conditional statements are such an important part of the Games section that we will address them in much more detail in the next lesson. For now, you have the necessary tools to tackle your first Group game. Remember to first determine the core of the diagram and the elements. This can sometimes be challenging in a Group game. If you need help, glance at the clues and questions to see what is moving around. These will be your game pieces or elements. Remember with group game blocks and antiblocks, you are now dealing with what must be together (or can never be together) *within* a single column rather than between columns. As a result, your block symbols should not insert a line between the elements.

Go ahead and dive into Game 3.

GAME 3

Game 3 and its questions are from PrepTest 44, Section 3, Questions 7–12.

During a certain week, an animal shelter places exactly six dogs—a greyhound, a husky, a keeshond, a Labrador retriever, a poodle, and a schnauzer—with new owners. Two are placed on Monday, two on Tuesday, and the remaining two on Wednesday, consistent with the following conditions:

The Labrador retriever is placed on the same day as the poodle.

The greyhound is not placed on the same day as the husky.

If the keeshond is placed on Monday, the greyhound is placed on Tuesday.

If the schnauzer is placed on Wednesday, the husky is placed on Tuesday.

1. Which one of the following could be a complete and accurate matching of dogs to the days on which they are placed?

- (A) Monday: greyhound, Labrador retriever
Tuesday: husky, poodle
Wednesday: keeshond, schnauzer
- (B) Monday: greyhound, keeshond
Tuesday: Labrador retriever, poodle
Wednesday: husky, schnauzer
- (C) Monday: keeshond, schnauzer
Tuesday: greyhound, husky
Wednesday: Labrador retriever, poodle
- (D) Monday: Labrador retriever, poodle
Tuesday: greyhound, keeshond
Wednesday: husky, schnauzer
- (E) Monday: Labrador retriever, poodle
Tuesday: husky, keeshond
Wednesday: greyhound, schnauzer

2. Which one of the following must be true?

- (A) The keeshond is not placed on the same day as the greyhound.
- (B) The keeshond is not placed on the same day as the schnauzer.
- (C) The schnauzer is not placed on the same day as the husky.
- (D) The greyhound is placed on the same day as the schnauzer.
- (E) The husky is placed on the same day as the keeshond.

3. If the poodle is placed on Tuesday, then which one of the following could be true?

- (A) The greyhound is placed on Monday.
- (B) The keeshond is placed on Monday.
- (C) The Labrador retriever is placed on Monday.
- (D) The husky is placed on Tuesday.
- (E) The schnauzer is placed on Wednesday.

4. If the greyhound is placed on the same day as the keeshond, then which one of the following must be true?

- (A) The husky is placed on Monday.
- (B) The Labrador retriever is placed on Monday.
- (C) The keeshond is placed on Tuesday.
- (D) The poodle is not placed on Wednesday.
- (E) The schnauzer is not placed on Wednesday.

5. If the husky is placed the day before the schnauzer, then which one of the following CANNOT be true?

- (A) The husky is placed on Monday. 
- (B) The keeshond is placed on Monday. 
- (C) The greyhound is placed on Tuesday. 
- (D) The poodle is placed on Tuesday. 
- (E) The poodle is placed on Wednesday. 

6. If the greyhound is placed the day before the poodle, then which one of the following CANNOT be placed on Tuesday?

- (A) the husky 
- (B) the keeshond 
- (C) the Labrador retriever 
- (D) the poodle 
- (E) the schnauzer 

Step 2: Symbolize the Clues and Double-check

We've got several clues that should feel familiar from the logic and games you saw on your LSAT prep. The first two clues should be straightforward to symbolize. The last two clues should be a bit more challenging.

The next two clues are conditional statements. However, if you follow the format you should have had last month, you should be able to symbolize them. The format should be the primary focus of the symbol, and the conditional should be next using a double arrow. The "if" statement should be to the left of the arrow. You should have immediately seen the contrapositive for each clue and made your own arrows if you did. Here are clues 3 and 4.

We are able to symbolize all the information, but now that we've done it, it may not seem very useful at this point. Don't forget to double-check before moving on to the next step.

Self-Assessment

Steps 1–3 Assessment

Steps 4–6 Assessment

Cracking Game 3

Step 1: Diagram and Inventory

We have a total of six dogs that need to be placed over a span of three days. Our diagram will consist of three columns labeled M, T, and W. Additionally, the setup tells us that exactly two dogs are placed each day. As a result, add two placeholder lines under each column. From the phrase “exactly six dogs,” we know that we’ll need to use all the elements and that we can’t have any repeats. Finally, all of our elements belong to the same category (dogs), so simply write them above the diagram.

G H K L P S	M	T	W
Clue Shelf	--	--	--

Step 2: Symbolize the Clues and Double-check

We’ve got several clues that should feel familiar from the first two games, and some new conditional clues discussed in the lesson. You should be comfortable by now with how the blocks and antiblocks work. The first two clues should be symbolized as follows.

1. $\boxed{LP}$

2. $\boxed{GH}$

The next two clues are conditional statements. However, if you followed the lesson, you should have had little trouble symbolizing these. The elements should be the primary focus of the symbol, and the categories should be noted using subscripts. The “if” statement should be to the left of the arrow. You should have immediately done the contrapositive for each clue and made sure your arrows aligned. Here are clues 3 and 4.

3. $K_M \rightarrow G_T$
 $\sim G_T \rightarrow \sim K_M$

4. $S_W \rightarrow H_T$
 $\sim H_T \rightarrow \sim S_W$

We are able to symbolize all the information, but since these clues are new, it may not seem very useful at this point. Don’t forget to double-check before moving on to the next step.